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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
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09/241,851    02/02/99    NAKAI    T    865.4335

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NEW YORK NY 10112

EXAMINER

CHANG, A

ART UNIT	PAPER NUMBER
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2872

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DATE MAILED: 08/13/99

**Please find below and/or attached an Office communication concerning this application or proceeding.**

**Commissioner of Patents and Trademarks**

# Office Action Summary

Application No.  
**09/241,851**

Applicant(s)

**Nakai**

Examiner  
**Audrey Chang**

Group Art Unit  
**2872**



- ☐ Responsive to communication(s) filed on \_\_\_\_\_.
- ☐ This action is **FINAL**.
- ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

A shortened statutory period for response to this action is set to expire 3 month(s), or thirty days, whichever is longer, from the mailing date of this communication. Failure to respond within the period for response will cause the application to become abandoned. (35 U.S.C. § 133). Extensions of time may be obtained under the provisions of 37 CFR 1.136(a).

## Disposition of Claims

- ☒ Claim(s) 1-8 is/are pending in the application.
- Of the above, claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- ☒ Claim(s) 1-8 is/are rejected.
- ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- ☐ Claims \_\_\_\_\_ are subject to restriction or election requirement.

## Application Papers

- ☐ See the attached Notice of Draftsperson's Patent Drawing Review, PTO-948.
- ☐ The drawing(s) filed on \_\_\_\_\_ is/are objected to by the Examiner.
- ☐ The proposed drawing correction, filed on \_\_\_\_\_ is ☐ approved ☐ disapproved.
- ☐ The specification is objected to by the Examiner.
- ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. § 119

- ☒ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).
- ☐ All ☐ Some\* ☒ None of the CERTIFIED copies of the priority documents have been
- ☒ received.
- ☐ received in Application No. (Series Code/Serial Number) \_\_\_\_\_.
- ☐ received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

\*Certified copies not received: \_\_\_\_\_

- ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

## Attachment(s)

- ☒ Notice of References Cited, PTO-892
- ☒ Information Disclosure Statement(s), PTO-1449, Paper No(s). 4
- ☐ Interview Summary, PTO-413
- ☐ Notice of Draftsperson's Patent Drawing Review, PTO-948
- ☐ Notice of Informal Patent Application, PTO-152

--- SEE OFFICE ACTION ON THE FOLLOWING PAGES ---

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## **DETAILED ACTION**

### ***Claim Rejections - 35 USC § 112***

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claims 1-3, 5-6 and 8 dependent from any of the claims of 1-3 and 5-6 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The phrase “a maximum optical path length difference ... respect to each of the at least two wavelengths” recited in claims 1-3 and 5-6 appears to be vague and indefinite since the optical path length difference is defined by the physical structure and thickness of the gratings and it is directly proportional to the design wavelength, it is therefore not clear associated to which wavelength of the “at least two wavelengths” is the design wavelength used to define the physical structure of the grating pair. The applicant is respectfully reminded that the condition of the maximum optical path length difference cited here is an inherent property of the grating pair constructed with particular physical structure and thickness with respect to one particular design wavelength. Such condition will therefore not be satisfied by light having wavelength other than the design wavelength. Claim 8 dependent from any one of the claims 1-3, and 5-6 inherit the rejection from its respective based claim.

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***Claim Rejections - 35 USC § 102***

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless --

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claim 1 is rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over the patent issued to Gerritsen et al (PN. 5,048, 925).

Gerritsen et al teaches a volume diffracting structure that is comprised of a pair of diffraction gratings (60 and 61) that are confronting each other through an air gap (64) wherein the pair of gratings are made of materials having different diffractive indices, which normally also differs in dispersion property, (please Figure 6 and column 2). This reference has met all the limitations of the claims with the exception that it does not teach explicitly that the maximum optical path difference is an integer multiple of a design wavelength however such property is either inherently met by the physical structure of the grating pair or an obvious modification to one skilled in the art since only when the optical path length difference introduced by the grating structure equals an integer multiple of the wavelength the interference between the light passes through the grating structure would be constructive. A destructive interference between the light beams pass through the grating structure would lead to cancellation between the light beams.

5. Claims 4, 7 and 8/4, 8/7 are rejected under 35 U.S.C. 102(b) as being anticipated by the patent issued to Miyake et al (PN. 5,283,690).

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Miyake et al teaches an optical diffraction grating element (2) having a diffraction grating formed on a substrate wherein both the peak portions (10a) and in particular the valley portions (11) are chamfered or having a chamfered shape, (please see Figures 10(b) and 10(c)). With regard to claim 8, Miyake et al further discloses that the optical diffraction grating element may be utilized in an optical pickup device which comprises a lens system (3 and 4), (please see Figure 2). This reference has therefore anticipated the claims.

***Claim Rejections - 35 USC § 103***

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claim 8/1 is rejected under 35 U.S.C. 103(a) as being unpatentable over the patent issued to Gerritsen et al.

The diffraction grating structure comprising a pair of gratings taught by Gerritsen et al as described for claim 1 above has met all the limitations of the claim with the exception that this reference does not teach explicitly to utilize the diffraction grating structure in an optical system having a lens system however since diffraction gratings are widely used in optical systems in particular to correct aberrations caused by lens systems in the optical system such modification would therefore have been obvious to one skilled in the art for the benefit of correcting aberrations of a lens system as stated above.

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***Double Patenting***

8. Applicant is advised that should claim 4 be found allowable, claim 7 will be objected to under 37 CAR 1.75 as being a substantial duplicate thereof. When two claims in an application are duplicates or else are so close in content that they both cover the same thing, despite a slight difference in wording, it is proper after allowing one claim to object to the other as being a substantial duplicate of the allowed claim. See MPEP § 706.03(k).

9. Claims 5-6 are objected to under 37 CAR 1.75 as being a substantial duplicate of claims 2-3. When two claims in an application are duplicates or else are so close in content that they both cover the same thing, despite a slight difference in wording, it is proper after allowing one claim to object to the other as being a substantial duplicate of the allowed claim. See MPEP § 706.03(k).

***Allowable Subject Matter***

10. Claims 2-3 would be allowable if rewritten or amended to overcome the rejection(s) under 35 U.S.C. 112, 2<sup>nd</sup> paragraph, set forth in this Office action.

11. Claims 8/2 and 8/3 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, 2<sup>nd</sup> paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

12. The following is a statement of reasons for the indication of allowable subject matter: Of the prior art references considered none has disclosed a diffractive optical element comprising a pair of diffraction

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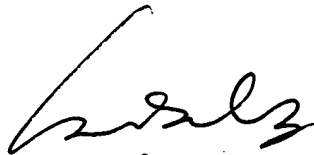
gratings differing in dispersion and confronting each other wherein the peak portions and the valley portions of the gratings are chamfered.

13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Examiner Chang whose telephone number is (703) 305-6208.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group receptionist whose telephone number is (703) 308-0956.

Papers related to this application may be submitted to Group 2800 through facsimile transmission. Papers should be faxed to Group 2800 via PTO Fax Center (fax number 703-308-7722) located in Crystal Plaza 4.

A. Chang

  
2872

August 11, 1999